10CFR50.73

Virginia Electric and Power Company
Surry Power Station
5570 Hog Island Road
Surry, Virginia 23883

September 18, 2015

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555-0001

Serial No.: 15-437
SPS: JSA
Docket No.: 50-281
License No.: DRP-37

Pursuant to 10CFR50.73, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to Surry Power Station Unit 2.

Report No. 50-281/2015-001-00

This report has been reviewed by the Station Facility Safety Review Committee and will be forwarded to the Management Safety Review Committee for its review.

Very truly yours,

For

N. L. Lane
Site Vice President
Surry Power Station

Enclosure

Commitment contained in this letter: None

cc: U.S. Nuclear Regulatory Commission, Region II
Marquis One Tower, Suite 1200
245 Peachtree Center Ave., NE
Atlanta, GA 30303-1257

NRC Senior Resident Inspector
Surry Power Station

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NRR

NRC FORM 366 (02-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Surry Power Station, Unit 2	05000281	1 OF 3

4. TITLE

Unit 2 Reactor Trip During Turbine Testing

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
07	21	2015	2015	- 001	- 00	09	18	2015	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
N	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
6	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
N. L. Lane, Site Vice President	(757) 365-2001

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
D	IT	--	--	Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On July 21, 2015 at 05:05, with Unit 1 at Hot Shutdown and Unit 2 at approximately 6% power, Unit 2 experienced a reactor trip initiated from a turbine trip during performance of the Turbine Overspeed Protection Control system circuitry testing. The turbine trip was caused by governor valves rapidly opening due to a speed error which had accumulated between the turbine speed and reference setpoint resulting in a rapid increase in impulse pressure. The root cause of this event was inadequate instructions in the Overspeed Protection Control testing section of the operating procedure. The testing will be removed from operating procedures and placed in test procedures that are not performed as part of routine turbine startup.

All systems functioned as required. Initiation of auxiliary or emergency systems was not required. Unit 2 was placed in hot shutdown and the health and safety of the public were not affected.

This report is being submitted pursuant to 10CFR50.73(a)(2)(iv)(A) as an event that resulted in the automatic actuation of the Reactor Protection System.

1.0 DESCRIPTION OF THE EVENT

On July 21, 2015 with Unit 1 at Hot Shutdown, Unit 2 was starting up following a shutdown to repair leakage to a pressurizer spray valve. With the reactor critical and stable at approximately 6% power, the turbine [EIIS-TA] was latched at 04:50 to perform the Unit 2 Turbine Overspeed Protection Control (OPC) system circuitry test. Operators were using operating procedure 2-OP-TM-001, "Turbine-Generator Startup to 20%-25% Turbine Power" when, by procedure, they entered a terminal speed of 550 rpm into the turbine control system [EIIS-IT] and initiated turbine rollup. This started the reference counter [EIIS-IT-CTR] pulsing up to achieve the desired turbine endpoint speed. The reference counter receives input signals and converts them into an analog voltage signal which inputs the desired end-point speed of the turbine to the circuit, and controls the final position of the governor valves [EIIS-SB-PCV].

Immediately after turbine rollup was initiated, the overspeed switch [EIIS-IT-SIS] was taken to the overspeed simulation position to test the circuit and the governor valves closed as expected. With the governor valves closed for the test, an error signal between turbine speed and reference signal was generated. When the overspeed switch was returned to the normal position, the actual turbine speed was 140 rpm with a reference signal of 230 rpm. The governor valves rapidly opened due to the speed error and caused a rapid pressurization of the turbine impulse chamber. A turbine trip signal was generated due to exceeding the 15% impulse pressure with the generator offline. Since indicated impulse pressure was greater than 10%, a reactor trip was generated by the turbine trip.

All systems functioned as required. Initiation of auxiliary or emergency systems was not required. Decay heat removal was maintained by dumping steam to the Main Condenser [EIIS-WI], and steam generator water level was maintained by the Main Feedwater system [EIIS-SJ]. Unit 2 was stabilized at hot shutdown.

At 0740 hours on July 21, 2015, a non-emergency, four-hour notification was made to the NRC pursuant to 10CFR50.72(b)(2)(iv)(B), any event or condition that results in actuation of the reactor protection system (RPS) when the reactor is critical.

This report is being submitted pursuant to 10CFR50.73(a)(2)(iv)(A) as an event that resulted in the automatic actuation of the Reactor Protection System.

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NARRATIVE

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

This event resulted in no safety consequences or implications. Appropriate operator actions were taken in accordance with emergency operating procedures and the unit remained in a stable condition. Station equipment relied upon to mitigate the event was available and responded as designed. Therefore, the health and safety of the public were not affected.

3.0 CAUSE

The direct cause of the trip was the governor valves opening due to a speed error between the turbine speed and reference speed. The root cause of this event is inadequate instructions. The initial plant and test conditions established by 2-OP-TM-001 were modified in 2003 and again in 2010 which introduced the potential to generate a speed error.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

A Unit 2 Event Review Team was established to perform an investigation of the event.

5.0 ADDITIONAL CORRECTIVE ACTIONS

A root cause evaluation was performed to identify the cause(s) and recommend corrective actions.

6.0 ACTIONS TO PREVENT RECURRENCE

Performance of OPC testing will be removed from operating procedures 1/2-OP-TM-001 and placed in test procedures that are not performed as part of routine turbine startup.

7.0 SIMILAR EVENTS

None

8.0 MANUFACTURER/MODEL NUMBER

Not applicable

9.0 ADDITIONAL INFORMATION

Unit 1 was at Hot Shutdown and remained unaffected by the Unit 2 reactor trip.